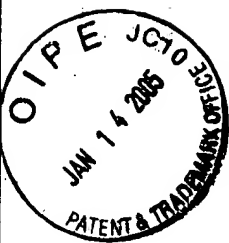


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IFW



application 09/892,351 date 06/28/01
US 2002 0021832 A1
New Zealand priority app' 505513 June 30 2000.
Mark Thomas Dawson
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14 January 04.

Thank you for your detailed action of 19 Oct 04. I request reconsideration of my application 09/892,351.

I will respond to the points raised, by referring to your numbering.

Please find rewritten claims enclosed.

1. I acknowledge receipt of notice of non-compliant amendment mailed 3/27/03.

I will take this opportunity to make amendments as are now required.

2. I included reference to prior art under 'background of the invention' in the specification in response to the USPTO 'Guide to Filing a Utility Patent Application' page 6/18 to show 'problems involved in the prior art solved by my invention.'

Of the references, 5,260,773 and 6,037,971 are cited on form PTO-892 and will be further discussed here.

The patents you have cited, themselves refer to prior art in 'background of the invention' in their specification.

3. Please find rewritten claims enclosed due to amendments required in response to your action.

The spelling of colour has been changed to color.

'to an observer' implied to be seen by an observer. It has been removed from claim 2 in rewritten claim 5.

'synchronizing signal detection' of claim 4 is detailed in the second paragraph under 'Variations' on page 22. This initiates a filter function.

'opposing filter' implied the other light modulating filter element that make up an electro-optic/anaglyphic viewing device.

The limitations from various claims are now explicitly recited.

To avoid objection, various claims have been rewritten.

For claim 1 see rewritten claims 1, 2 and 3.

For claim 2 see rewritten claim 5.

For claim 3 see rewritten claim 4.

For claim 4 see rewritten claim 6.

For claim 5 see rewritten claim 7.
For claim 6 see also rewritten claim 6.
For claim 7 see also rewritten claim 7.
For claim 8 see rewritten claim 8.
For claim 9 see rewritten claim 9.
For claim 10 see rewritten claim 10.
For claim 11 see rewritten claim 11.
For claim 12 see rewritten claim 12.
For claim 13 see rewritten claim 14.
For claim 14 see rewritten claim 13.
For claim 15 see also rewritten claim 12
For claim 16 see also rewritten claim 13
For claim 17 see also rewritten claim 12
For claim 18 see also rewritten claim 13.
For claim 19 see rewritten claim 14.
For claim 20 see rewritten claim 15.
For claim 21 see rewritten claim 16.
For claim 22 see rewritten claim 17.
For claim 23 see rewritten claim 18.
For claim 24 see rewritten claim 20.
For claim 25 see rewritten claims 22-27
See new claim 21.

4. Quotation noted.

5. Claims 1-19 have been rewritten to distinctly point out and claim the invention.
‘The resulting anaglyphic image’ has been removed from rewritten claim 1.
The effect of control over brightness in the resulting anaglyph is described.
‘Should the ACB filter value for black be increased, the ‘resulting anaglyph’ is brighter yet.
Claim 19 has been rewritten in total.

6. Quotation noted.

7. Regarding Claims 1-4 and 6.

Regarding McLaine 6,037,971.

The anaglyphic production method claimed by McLaine 6,037,071 claim 2 involves using the red, green and blue image plane outputs of left and right video cameras. The red image plane from one camera and the green and blue image plane from the other are simply combined to form an anaglyph as is common.

See McLaine 6,037,071 Fig’ 2.

I refer to such common method in my application as R/GB split including in the mention of 6,037,071 in prior art on page 2.

McLaine attempts to address retinal rivalry in an anaglyph by substituting other image planes when pure colors are detected in an anaglyph record.

Regarding claim 1.

You state that McLaine discloses an anaglyphic production method including;

a) synchronizing the images...

6,037,071 claim 2a refers to 'capture' using left and right video cameras.

My claim 1a refers to isolating any two separate records or synchronizing the images of a stereo pair to achieve an 'image pair' of first and second images;

My claim 1a thus includes component images that need not be left/right interrelated.

See 09/892,351, the first paragraph of ITEM 7. 'Alternative 2-D Use...'

You state that McLaine discloses an anaglyphic production method including;

d) effecting selective color filter treatments...for control of... brightness...

Concerning selective color filter treatments.

McLaine does not disclose or claim selective color filter treatments or treatment of any kind for the 'image pair.'

But On page 6/14 refers only to the 'colored gel' used for an alternative method of capturing and viewing anaglyphic images as 'filters'

McLaine discloses the 'combining, adding, substitution and replacement' of Color Image Planes of 'anaglyphic images.' See 6,037,071. 'Disclosure of the Invention' paragraphs 6, 11, 12 and under Fig' 5.

McLaine does not mention or address 'increasing saturation of the image pair to the nth degree' and only combines, adds, substitutes and replaces 'image planes.'

The '"N" steps' of 6,037,071 in the second to last sentence of text for Fig' 6 refers to the degree of brightening of a replacement image plane.

'...electronic switch which replaces the red image plane with a brightened version of the green image plane from the same camera which originated the red image plane. Such brightening occurs by incrementing the green intensity level by "N" steps.'

My application 09/892,351 addresses the image pair, typically left and right images, that are to 'become' an anaglyph image.

In my application the 'image pair' are prepared by process of selective color filter treatment that enable contrasts of the full spectrum from corresponding areas of the stereo pairs to be perceived with equal brightness and contrasts when viewed anaglyphically.

See 09/892,351 page 8 lines 22-24.

The condition of 'retinal rivalry' solved by (ACB) is outlined in my application 20020021832 under 'Background of the invention' line 10 onward.

McLaine 6,037,071. Fig 5 addresses 'retinal rivalry' of pure red or pure blue regions in anaglyphic images produced by R/GB split as per Fig 2. by decreasing the saturation of pure colors detected in an anaglyph.

This modifies an anaglyph produced by R/GB split.

Concerning the control of increasing/decreasing the brightness in an anaglyph.

Control of brightness and control of retinal rivalry are separate issues.

My application 09/892,351 details the functions of the anaglyphic contrast balance filter (ACB) on page 9. (ACB) prevents anaglyphically viewed retinal rivalry such as is

perceived when viewing pure red or blue objects. However it treats the full spectrum continually.

Also included in the list of (ACB) functions is;

Function 5. 'To effect control of the brightness of the resulting anaglyphic image'

The last section of page 9 describes a particular selective control of black color records in the left and right images where increasing their (ACB) filter values results contrarily in a brighter anaglyph and visa versa.

'should the ACB filter value for black not be reduced, a brighter anaglyph results'

That is to say, a 'predictive' control for the 'overall brightness' of the resulting anaglyphic image.

6,037,071 only addresses 'portions or regions' of an anaglyph where pure red or blue is evident where "one eye will perceive black and the other eye will perceive nothing."

Please find that this is an example of addressing retinal rivalry and not one of control of overall brightness.

6,037,071 addresses retinal rivalry by modifying the image planes of the anaglyph. See Figures 5 and 6. There is no mention of overall brightness control.

In my application 09/892,351 I refer to the 'image planes' of anaglyphs as 'color channels' as their function is to contain separated images via color coding.

In fundamental difference to 6,037,071, my application 09/892,351 clearly states to not alter the color balance in a produced anaglyph. See page 15. under Post Production.

'Additional treatments to assist anaglyphic presentation include any broad spectrum alterations that do not effect the color balance.'

I find the method disclosed by McLaine 6,037,071 deficient as is detailed below.

When a red or blue within a colored anaglyphic image is being observed through red/blue viewing gels, one eye perceives the object as too bright while the other eye perceives it as too dark.

Both eyes perceive the brightness and contrasts of the object incorrectly. This is retinal rivalry.

McLaine addresses retinal rivalry with fig 5.

If pure red, within a tolerance, is detected in the anaglyph, green/blue information is added eliminating pure red. Red/green information is added eliminating pure blue if it is detected.

One problem with this is that the color image plane information from fig' 5 is intended for specific left and right eye views. Adding or combining the image planes allows the eyes to perceive a brightness balance in pure colored regions due to some of the 'opposing' view becoming visible and so ghosting, 'double imaging' will result.

Fig' 6 however discloses monitoring the exposure of red in R/GB split anaglyphic images produced by Fig' 2 and correcting under or overexposure by substituting the green image plane for the red image plane from the 'same' camera.

One problem with this is that if the red image plane is replaced by the green image plane as detailed in the second paragraph under Fig' 6, and in the drawing Fig' 6, the new green image plane then becomes visible to the opposing view.

If the new green image plane is reassigned as a red image plane then the retinal rivalry of anaglyphically viewing red will be improved as red will be perceived darker by the eye viewing through red gel. But the eye viewing through blue gel will maintain its perception of red as being incorrectly too dark.

An anaglyphically viewed balance is not achieved.

The main problem with McLaine 6,037,071 is that pure red and pure blue color zones are in fact required for the screen or page display of anaglyphic images.

In an anaglyph image, the left and right views of objects are comparatively laterally displaced. See 6,037,071 on this matter, seventh paragraph under 'Background Art'

Apart from the imaging of red or blue 'objects' in a scene, bright saturations of red and blue are required to represent the relative displacement zones of the left and right views especially where objects of relatively opposite color or contrast appear within the 3-D image. These zones are frequently referred to as color fringes and are present in all anaglyphic images. A color fringe in a typical anaglyph causes one eye to see an edge of an object while causing the other eye to see behind the object.

They are visible when viewed unaided but should not be visible when anaglyphically viewed.

Altering the display of such color zones will result in double imaging for both views in the area of these zones.

As the effect of the purity monitor and color adder of 6,037,071 is indiscriminant between colored objects being imaged and color fringe zones, 6,037,071 results in counterproductive reduced color channel efficiency and double imaging.

See 6,037,071 at the end of text for fig' 5 'The modified 3-D color output information from color adder 510 has somewhat more muted color information...'

Please find from the above reply and explanation that claim 1 is patentable over McLaine.

Concerning steps b, c and e-h being optional.

Claim 1 is now rewritten to avoid optional steps.

Regarding claim 2 of 09/892,351.

My application claims production methods, apparatus for production, apparatus for display, and the images produced.

The apparatus of claim 2 is limited to the display of anaglyphic record produced as claimed in claim 1.

The listing of parts d, d, f in claim 2 was inadvertent and parts d, e, f was intended.

Explanation of the requirement for parts d, e, and f of claim 2 follow.

- d. Viewing gels of single frequency (same color) reveal a single color channel (program) to both eyes. See Item 7 of 09/892,351 page 33 lines 30-33.
- e. A color record removal means, removes a color channel from the display signal for a screen or projector to reveal a single color channel (program) to both eyes. See Item 7. page 33 lines 38-40.
- f. Viewing gels of opposing spectral frequencies reveal separate color channels to both eyes. See Anaglyphic Viewing. Page 15 lines 20-28.

Please find a rewritten claim 2, now as claim 5

Regarding Claim 3.

Claim 3 claims images produced as claimed in claim 1, that by limitation of claim 2, may be sent or received on-line, stored and reproduced from a recording medium and broadcast;

Please find that claim 3 is rewritten now as claim 4.

Regarding claim 4.

Please find new Claim 4 amended to claim the modulation of images produced as per claim 1 with unnecessary steps from claim 1 (claims 4b-4k) and the optional steps removed. Please find that claim 4 is rewritten and is now represented in claim 6.

Concerning the control of brightness. Please refer to the above reply for Claim 1 under 'Concerning the control of increasing/decreasing the brightness in an anaglyph.'

Regarding claim 6.

Please find a rewritten claim 6, without optional limitation.

8. Regarding Claim 5.

Claim 5 claims images produced as claimed in claim 4. Claim 5 has been rewritten now as claim 7.

Roese is acknowledged under Item 3 of 09/892,351 page 17 lines 21-22 only for 'wireless transmission of the VSPI to electro-optic shutters'.

3-D images viewed by electro-optic shutters are not viewed simultaneously or continuously by both eyes. Electro-optic shutters allow alternations of view between left and right eyes.

See Roese 4,424,529 on lines 10-12 under 'Summary of the invention.'

'Each electro-optic shutter means is connected to the switching logic...so as to alternately operate between maximum and minimum optical transmission states.'

Electro-optic shutter 3-D and anaglyphic 3-D are distinct and established varieties of 3-D method.

Dischert 5,260,773 combined the two varieties and received a patent grant from your office.

The images claimed in claim 5 however are 'with balanced color contrasts from the whole spectrum'

Dischert 5,260,773 discloses in the first paragraph under 'Summary of the invention'

'It is an object of the present invention to provide a 3-dimensional color television system which reduces the annoyance caused by different colors and brightnesses in each eye, (anaglyphic) and which reduces the flickering of images caused by the alternating left/right viewing systems of prior systems.' (electro-optic)

Dischert uses an R/GB split anaglyph production method except that the left/right split is instead between Green/Red-Blue. (G/RB)

Green left oriented anaglyph images are alternated with green right. (G/RB to RB/G)

See the second paragraph under 'Description of preferred embodiments'

Left camera 20 produces three color signals GL, RL and BL ... Similarly, right camera 30 produces three signals GR, RR, and BR. The green, red and blue components from both cameras are combined ... into three separate signals, G, R and B.

See the third paragraph under 'Description of preferred embodiments'

'...multiplexer 40 alternately provides the signals GL, RR and BR and the signals GR, RL and BL ... during successive field intervals.'

A problem with Dischert 5,260,773 is that despite the open and blanked strobe views of electro-optic shutters being replaced by the continuous viewing of alternating color channels there remains a flicker.

Dischert 5,260,773 acknowledges in paragraph 12 under 'Description of Preferred Embodiments' '...the eye/brain is less susceptible to color flicker than to luminance flicker...'

Retinal rivalry is evident when viewing an anaglyph of any color channel assignment including G/RB or GB/R anaglyphs. Retinal rivalry remains present despite rapid alternation of the color channels.

That is to say, there is 'color flicker' from alternating color channels and also an alternating 'brightness flicker' from the retinal rivalry within the color channels.

My application 09/892,351 addresses retinal rivalry to achieve anaglyphically perceived balanced brightness and contrasts. Thus corresponding areas of the left and right anaglyphic views are perceived as equal in brightness.

See 09/892,351 page 3 under Item 2 for when such color channels are modulated.

'...the observer receives both halves of the anaglyphic spectrum for each eye as rapid modulations of equal brightness without a strobe effect as both eyes are viewing continuously.'

This results in a further stabilized alternating image over Dischert 5,260,773.

Regarding claim 7.

Claim 7 claims the images produced as claimed in claim 6.

Claim 7 has been rewritten and is represented with ex claim 5 as claim 7.

See also the reply above for claim 5.

Regarding Claim 8.

Roese does disclose the transmission of synchronising signals to electro-optic shutters.

Roese is acknowledged under Item 3 of 09/892,351 page 17 of my application.

The apparatus of claim 8 is claimed dependently for the display of record produced in claim 4.

Roese does not disclose 'modulated color removal' or address color.

Modulated color removal of my application is applied to modulating color channels to enable unaided viewing of a selected channel. It may be active-removal from the display signal, or passive-removal via screen covering filter. See 09/892,351 the last five lines of item 7 page 33.

Therefore part 8l is an alternative to electro-optic/anaglyphic parts 8j and 8k.

Claim 8 has been rewritten, to avoid optional limitations, as claim 8.

9. Regarding claim 9.

Taguchi 5,850,580 involves multiple images as are necessarily required with all lenticular images.

The abstract and claims of 5,850,580 inform of an improved lenticular light-sensitive material with an anti-halation layer between the lenticular sheet and recording layer permitting exposure of stereoscopic or plurality of images to the rear side with increased line width and satisfactory registration.

The lenticular material of Taguchi would be suitable for the display of interpolated (ACB) images of my application as per claim 11 as would all prior art lenticular print material.

Neither McLaine or Taguchi disclose anaglyphic images displayed via lenticular means.

The inventive steps involve presenting the lenticular array horizontally instead of vertically, interlacing anaglyphic images instead of stereo pairs and reverting from unaided lenticular viewing to aided anaglyphic viewing to achieve perception of multiple stereoscopic graduations of vertical parallax and or motion picture.

Claim 9 of 09/892,351 is dependant on the display of images produced as per claim 1.

Claim 9 has been rewritten as claim 9.

Regarding claim 11.

My application dependently claims apparatus for the display of anaglyphic/lenticular images produced in accordance as claimed in claim 9.

Claim 11 has been rewritten as claim 11 to include 'display medium' on which to receive images from a printing means as described in the specification of 09/892,351. See the last paragraph of Item 5 on page 26.

'Anaglyphic/lenticular print may be achieved with existing photographic and lithographic printed display...'

Regarding claim 25.

McLaine refers to separate left and right cameras as are required for photographic stereo image capture.

My application 09/892,351 claims a process that enables instant production of improved anaglyphic image via analogue and or digital components as disclosed.

Claim 25 dependantly claims apparatus for anaglyphic production as processed in claim 4.

Claim 4, as originally filed, duplicates the process of claim 1, see Claims 4b-4k match claims 1b-1k.

Note that step 4a allows also for no modulation for fixed color channel production via 'any rate selected';

See claim 4a lines 3-4 '...and alternating the image pair...at any rate selected...'

Claim 25 also claims the modulating color removal of steps 4l-4n to convert to a modulation as is claimed in claim 6.

See step 4m lines 3-4 '...so that at any instant during an odd or even field scan only two color saturations are present with one color saturation as each anaglyphic color channel...' This corresponds to claim 6;

See claim 6 lines 2-5 'as claimed in claim 4... so that at any instant during either an odd or even field scan display only one of the second or third colour saturation assignments of anaglyphic colour channels are present...and anaglyphically oppose the first colour saturation...'

Note that claim 4n corresponds to claim 6 lines 5-7 'where the luminosity of the first color saturation assignment is reduced proportionate to its relative over-inclusion...'

Claim 25 also includes multiple stereo pair capture. See part 25a '...stereoscopic capture and any multiplicity (of) stereoscopic capture of two or more pairs...'

Claim 25 also claims step 4o '...where there were more than two image pairs of step a, interpolating the anaglyphic records of the two image pairs together...'

This results in quadrascopic/anaglyphic record as per claim 15a and b.

Claim 25 also claims step 4q;

optionally, interpolating together the isolated image pair of step a...and where there are two isolated image pairs of step a, interpolating together a second image pair...and then interpolating together the first and second interpolated records...for viewing via electro-optic shutters.

This results in quadrascopic strobe of claim 23 and 24 as disclosed in the second paragraph under 'Alternatives' on page 30. where 'the color altering functions of the quadrascopic ACB filters and blenders are all inactivated...'

Claim 25e claims selective color removal to achieve two-dimensional conversion as described in the specification;

See Item 6 page 32 line 12 '...and optional two-dimensional playback or conversion provide the operator with useful features.'

Claim 25, as originally filed, has been rewritten and is now represented as claims 22-27 in order to claim the features described above.

Concerning color removal switch.

McLaine 6,037,071 Fig' 2 refers to color planes switch 220 where the red color plane from the left camera is substituted for the red color plane of the right camera to produce R/GB anaglyph. McLaine more frequently refers to them as image planes.

McLaine refers to substitution of color in text for Fig's 2 and 6 and replacement of color in text for Fig' 6, but does not refer to color removal from anaglyph image for unaided 2-D viewing of a selected channel.

My application 09/892,351 first describes active color removal by filter/switch for a method of converting modulated anaglyph in the last paragraph of Item 4 page 25 where an image plane separator is mentioned as a possible component.

See 09/892,351 Item 7 from the last paragraph on page 33 onward for detailed function of active and passive color removal for unaided 2-D viewing.

Active and passive color removal is claimed for various 'apparatus for display'

Claim 25 is dependant on claim 4 that includes colour record removal.

Both claims have been rewritten to avoid optional steps/parts.

10. Regarding claim 12.

Taguchi discloses the common use of a plurality of images 'printed' for lenticular display but does not disclose 'anaglyphic images' displayed via lenticular means.

See also the reply for 9. Regarding claim 9 above.

Stuettler 5,870,137 discloses a method for flicker-free display and greater clarity by displaying progressively scanned frames twice within a frame period.

Electro-optic methods commonly and preferably involve interpolating left/right views as odd and even scans to assist their separation, synchronisation and reduce electro-optic flicker.

Stuettler's objective is superseded by the alternating color channels of my application as both eyes have an actual continuous view.

Stuettler does not disclose interpolating anaglyphic images or a method of producing horizontal and vertical parallax as is produced by claim 12.

The increased speed of Stuettlers left/right strobe application has less advantage for modulating anaglyphs as the eye is less susceptible to a color sequence than to the on/off sequence of electro-optic viewing.

See also Dischert 5,260,773 concerning this, in paragraph 12 under 'Description of Preferred Embodiments' '...the eye/brain is less susceptible to color flicker than to luminance flicker...'

09/892,351 claim 12 is dependant on images produced in claim 1 and interpolates two anaglyphic records onto a field displaying lenticular screen to produce quadrascopic/anaglyphic imaging.

There is no induced flicker beyond that inherent in the display monitor with the quadrascopic/anaglyphic system of my application even when the quadrascopic/anaglyphic display of claim 12 is modulated for full color as claimed in claims 15-19.

The quadrascopic/anaglyphic production and display of claims 15-19 providing flicker free horizontal and vertical parallax in full color to each eye are novel, not the equipment used, as with McLaine, Taguchi and Stuettler.

Claim 12 is now represented in rewritten claim 12.

Regarding claim 17. Refer to the above reply for claim 12.

Regarding claim 13

All lenticular viewing involves a choice between viewing channels. Here, the interactive choice is vertical, for the anaglyphically viewed perception of interrelated anaglyphic images.

This apparatus claimed is dependant on images produced as claimed in claim 12.

The apparatus of part 13b is not required with part 13c.

Claim 13 has been rewritten as claim 14.

11. Regarding claim 15.

Battersby 6,069,650 discloses an autostereoscopic screen where liquid crystals form a lenticular screen surface that can be turned off for full resolution 2-D use.

Fig' 2 involves four interrelated columns of images providing three stereo pairs, as is common with printed lenticular images, here they are displayed instead on a screen. Battersby combines existing lenticular 3-D with existing liquid crystal display for an autostereoscopic device.

The autostereoscopic screen of 6,069,650 rotated 90 degrees would be suitable for apparatus for the display of quadrascopic/anaglyphic image produced as claimed in claims 13 and 19.

The motivation of reducing flicker by allocating two records as field scans is with electro-optic 3-D, not autostereoscopic 3-D.

Claim 15 of my application involves modulating anaglyphic images of upper and lower stereo views allocated to odd and even field scans displayed on a horizontally oriented lenticular screen and viewed by electro-optic/anaglyphic viewers for 3-D or via modulating color removal for 2-D.

McLaine, Battersby and Stuetzler combined would not result in the invention of claim 15 without also the alternation of Dischert, and also the application of modulating color removal. Additionally, the system is required to be rotated 90 degrees as the orientation of the lenticular array of lenses for claim 15 is horizontal.

Please find that as prior addressed here, that the present invention in the field of anaglyphic 3-D, has been shown to be an inventive step over each.

Claim 15 has been rewritten and is now represented as claim 12.

Regarding claim 20. Refer also to the reply for claim 15 above.

The autostereoscopic screen of 6,069,650 would be suitable for the display of the autostereoscopic/anaglyphic image produced in 09/892,351 claim 20.

The advantage of autostereoscopic/anaglyphic is that it enables the selection between two separate autostereoscopic programs from the image signal as claimed in claim 21.

The production of modulating color channels, their interpolation and concurrent display and their decoding via modulating color removal to enable unaided viewing between two 3-D programs from one image signal in full color to both eyes is not apparent without the inventive steps.

Claim 20 has been rewritten to avoid optional steps and is now claim 15..

Regarding claim 21. See also the reply for claim 20.

The choice Battersby discloses is of switching the screen between half resolution 3-D and full resolution 2-D by turning the liquid crystal lenticular screen off.

Claim 21 claims the choice between two separate autostereoscopic programs from the one image signal.

For claim 21 'stereoscopic' in line 1 has been corrected to 'autostereoscopic' as is correct.

Claim 21 has been rewritten as claim 16.

Regarding claim 22.

Battersby discloses a perspective view of a lenticular means in FIG. 3.
The apparatus of claim 22 is dependant on the images produced by claim 20.

12. Regarding claim 19.

The apparatus of claim 19 is dependant on the images produced by claim 15.

The reply's presented above for claim 8 are applicable for claim 19.

In claiming apparatus for the display of 'images produced' there seems no objection to include in general terms apparatus that is required for the display.

Claim 19 has been rewritten as claim 14.

13. Regarding claim 14.

Montes 5,004,335 discloses an autostereoscopic system that requires multiple projectors.

In the fourth to last paragraph of 'Background of the invention'. 5,004,335 refers to a fly's eye lens sheet, capable of reproducing both horizontal and vertical parallax simultaneously generally with thousands of spherical lenses '(for example 10,000).'

His following paragraph explains that such reproduction systems also require a large band width for transmission.

'the processes of image recording and reproduction require the handling of an enormous amount of information, because every plano-convex lens requires a full two-dimensional image and thousands of plano-convex lenses...'

The last paragraph of 'Sumary of the invention' mentions a '...system which reproduces variation of vertical and horizontal parallaxes.' But it seems not to be fully disclosed. Montes 5,004,335 however is not an anaglyphic system and further highlights the novelty of the present invention for presenting simultaneous horizontal and vertical parallax in full colour on a monitor via anaglyphic means.

5,004,335 does not cover anything described or claimed in 09/892,351 other than the terminology for the parallax pursued.

Claim 14 has been rewritten as claim 13.

Regarding claim 18.

The reply's presented above for claim 14 are applicable for claim 18.

My application seeks to claim the images produced as per claim 17.

Claim 18 has been rewritten as claim 13.

14. Regarding claim 16

The reply's presented above for claim 14 and claim 18 are applicable for claim 16.

Claim 16 has been rewritten and is represented as claim 13.

15. Regarding claim 23.

Stuettlers method assists electro-optic 3-D 'in general' by increasing the display speed.

Stuettler does not 're-interpolate' first and second interpolated records but rather describes interpolated left and right records of stereo methods suited for his improvement.

Battersby has only described multiple image pairs in relation to lenticular images which are commonplace with lenticular viewing of horizontal parallax.

Missing is the rotation of screen orientation and field synchronisation for 'aided' electro-optic viewing, being contrary to the endeavour of 'un-aided' lenticular viewing.

09/892,351 Claim 23 involves interpolating two stereo pairs for electro-optic viewing as an alternative output of the quadrascopic/anaglyphic filter with its color treatments turned off. See 09/892,351 second paragraph under 'Alternatives' page 30.

Perception of horizontal and vertical and diagonal parallax results, but with the strobe associated with electro-optics.

Claim 23 has been rewritten as a claim dependant on the modulating quadrascopic/anaglyphic production method.

Claim 16 has been rewritten as claim 18.

16. Regarding claim 24. Refer also to the above reply for claim 23.

Battersby discloses a vertical, not horizontal, array of lenticular lenses that are composed of electrically alterable liquid crystal so as to provide horizontal parallax for 3-D.

See Battersby, text for Fig' 2 '...lenticular element 16 overlies a respective group of four adjacent pixel columns such that four vertical strips, each representing a vertical...'

Stuettler combines existing monitor viewing with a faster display rate to assist existing 3-D systems including electro-optic shutter.

In 09/892,351 the orientation of the lenticular array of lenses is horizontal providing vertical parallax. Horizontal parallax is provided via electro-optic means.

Both the Stuettler and Battersby systems would be suitable apparatus for the display of quadrascopic strobe if rotated 90 degrees as would any prior art lenticular monitor display.

Any existing electro-optic shutters are suitable for viewing quadrascopic/electro-optic strobe.

Claim 24 dependantly claims apparatus for display of images produced by claim 23.

Claim 24 has been rewritten as claim 20.

17. Exhibit claim 10 is dependant on production claim 9 and thus indirectly to claim 1. So claim 10 should not be written in independent form.

Claim 10 has been rewritten as claim 10.

18. Dischert 5,260,773 has been prior addressed in this reply.

Hines 5,614,941 Involves an autostereoscopic display system that is not anaglyphic to any extent and involves many components that are a departure from the common equipment used by my application.